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XL.—*The Humming-birds of the West Indies.* By D. G.  
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THE geographical distribution of the various species of the great Family Trochilidæ inhabiting the different islands of the West Indies never having been separately worked out, I have thought it would be interesting if a list of the Humming-birds now known to be found in that portion of the world were published, with the habitats of each, so far as ascertained, and that, the attention of ornithologists having been directed to the subject, additional light might be thrown upon it by future researches.

For many years we have had a more or less perfect knowledge of the avifauna of certain of the larger islands, although, even of these, but few have had the advantage of the presence of a resident practical ornithologist. Of the large number of the small islands, as regards their fauna, we at present actually know nothing. It is not necessary for me to recapitulate here the extent of our information and the means by which it has been acquired, that having been already accurately done by Mr. Sclater in his paper on the birds of Santa Lucia, pub-

lished in the Zoological Society's 'Proceedings' for last year ; it will suffice for me to say that, of all the West-Indian Islands, we have more or less complete information of the birds inhabiting the following islands only:—Nassau and Long Island of the Bahamas, Cuba, Jamaica, St. Domingo, Porto Rico, St. Thomas, Sombrero, Ste. Croix, St. Bartholomew, Dominica, Martinique, and Santa Lucia. Guadaloupe and St. Vincent possessed resident naturalists ; but only fragmentary accounts of their avifauna have ever been published. Here, then, out of the very great number of islands comprising the group known as the West Indies, from only thirteen have ornithologists obtained any information ; and that from some of even them is of a most unsatisfactory description. I do not pretend, therefore, in this paper to be able to give the complete geographical distribution of the Trochilidæ of the West Indies, but am merely able to add to what is already known certain other localities regarding which we have of late obtained information. A peculiarity that is remarkable of this group is the fact that certain islands contain species not met with elsewhere, and that but few species of those found in the West Indies are ever seen upon the continent of either North or South America. It will be understood that in speaking of the West Indies, I do not include the islands of Tobago and Trinidad, whose fauna is more that of the neighbouring portion of South America than of the scattered islands lying to the northward.

The two islands of the Bahamas mentioned in this paper contain each a distinct species of *Doricha*, a genus not found in any other of the West Indies, and the only representatives of which are to be met with in Mexico, Guatemala, Costa Rica, and Veragua. Cuba, besides being visited by the migratory *Trochilus colubris*, has two species peculiar to itself, *Calypte helenæ* and *Sporadinus ricordi*, the last a genus only found in the Greater Antilles except Jamaica. This latter island possesses three species, two of which, however, are not found elsewhere ; and the third, which is the smallest Humming-bird known, and incapable, it would seem, of any continued flight, is nevertheless an inhabitant of St. Domingo. This would seem to show that at one period those two islands were only one, and that this little species, the *Mel-*

*lisuga minima*, has been enabled to preserve its specific distinctness in spite of climatic and other influences, although, since the two islands were established as they now are, other and distinct forms of the same family have asserted themselves within their respective limits. Besides the species just named, St. Domingo contains two others which are not found elsewhere. Porto Rico contributes two species to the family, of which it is the only habitat; and this island marks the south-eastern boundary of the genus *Sporadinus*. Of the Virgin Islands, St. Thomas and Ste. Croix are known the best; in fact they are about the only ones of which we have any full information. The former of these contains three species of Trochilidæ, none of which, however, are peculiar to it. It is, however, the northern limit of the genera *Orthorhynchus* and *Eulampis*. Ste. Croix has but two species, which are also inhabitants of other islands. Prof. Sundevall, in his list of the birds of St. Bartholomew, mentions two species of Trochilidæ as indigenous to that island, the *Orthorhynchus exilis* and *Eulampis holosericeus*. From his description of the former, it would seem to be the *O. ornatus* (if the differences pointed out by the describer of that so-called species were not so unsatisfactory as to render it exceedingly difficult to make it out), as he mentions a slight amount of blue on the crest. As to the latter, we might naturally look for it in this island, which is in a direct line with the others inhabited by this species.

Sombrero, a mere naked rock, contains at times the *Eulampis holosericeus*, specimens having been collected by Mr. Julien and sent to Mr. Lawrence. Our next point where any members of this family are known to dwell is the small island of Nevis, which contains two species, one of which, the *Eulampis jugularis*, is also found in Dominica, Martinique, and Santa Lucia, and possibly in the large island of Guadaloupe, although we have no proof of the fact. Dominica possesses three species of Humming-birds, none of which is restricted to it; but between this island and the more southern one of Santa Lucia, appears to be the stronghold of the genus *Eulampis*, as both this island and the one last named contain the two species comprising the genus.

Only two species are known in the large island of Martinique, both of which are also inhabitants of Nevis.



Santa Lucia, of a certain number of whose birds, collected by Mr. J. E. Semper, Dr. Selater has lately given a list, has three species, all of which are found in Martinique.

Only one species inhabits St. Vincent and Barbadoes, the *Orthorhynchus cristatus*; and it is not found anywhere else.

These are all the islands of the West Indies of which we are aware that any member of the Trochilidæ is an inhabitant.

From the foregoing it will be perceived that, although the same species may be an inhabitant of several islands, yet they are always contiguous to each other, and that no other species of the same genus ever intervenes, as is the case with some genera in the Indian archipelago, where one species inhabiting two islands will have a distinct form of the same genus living on an intermediate one. The members of the genus *Eulampis* appear to have one of the widest ranges (only exceeded by the next), extending from the island of St. Thomas to that of Santa Lucia; and we may naturally expect to find it on the islands lying between these, when their avifauna becomes known. *Orthorhynchus* passes over the greatest extent of latitude, being found from St. Thomas to Barbadoes, one species extending to Dominica, the second to Santa Lucia, and the third to the limit of its dispersion. The remaining genera *Lampornis*, *Aithurus*, *Doricha*, *Trochilus*, *Calypte*, *Mellisuga*, and *Sporadinus* are either (as is the case with the first, third, and fourth) casual or outlying representatives of continental divisions of the family, or peculiar forms of most restricted habitats, and which have sprung into existence, in all probability, after this extent of land had been broken up into the dispersed groups by which it is now known to us. The annexed Table (p. 357) will give a more correct idea of the geographical distribution of the various species.

In the following list I have made whatever corrections have appeared necessary in synonymy or nomenclature, and referred to their respective places any species which I have considered established upon doubtful or insufficient grounds.

#### LAMPORNIS VIRIDIS.

*Trochilus viridis*, Aud. et Vieill. Ois. Dor. vol. i. p. 34, pl. xv. (1802).

*Lampornis viridis*, Gould, Mon. Troch. vol. ii. pl. lxxviii.; Tayl. Ibis, 1864, p. 169.

*Hab.* Porto Rico (*Taylor*).

This species seems to be entirely restricted to the Island of Porto Rico, where it is by no means common; and among collections of Trochilidæ it is one of the species generally absent.

LAMPORNIS DOMINICUS.

*Trochilus dominicus*, Linn. Syst. Nat. p. 191 (1766), ♀; Gmel. Syst. Nat. p. 489 (1788).

*Trochilus margaritaceus*, Gmel. Syst. Nat. p. 490 (1788), ♀.

*Trochilus aurulentus*, Vieill. Ois. Dor. pl. xii. (1802).

*Polytmus margaritaceus*, Gray, Gen. of Birds. vol. i. p. 108, sp. 13.

*Lampornis margaritaceus*, Bon. Consp. Gen. Av. i. p. 72, sp. 5.

*Lampornis aurulentus*, Gould, Mon. Troch. vol. ii. pl. lxxix.; Cass. Proc. Acad. Phil. 1860, p. 377.

*Lampornis virginalis*, Gould, Mon. Troch. vol. ii. pl. lxxx.

*Hab.* St. Thomas (*Riise, Cassin*), St. Domingo, Porto Rico (*Bryant*).

This is undoubtedly the species described by Linnæus, in his twelfth edition, as *Trochilus dominicus*; for, although it was a female upon which he founded the species, the characters enumerated by him are too clear, particularly those of the tail, to permit the supposition that some other bird was intended. Besides, the account given by Brisson, whom Linnæus followed, is very full, and shows plainly that the female of the species generally called *Lampornis aurulentus* was well known to that author; and it is described by him in his 'Ornithology,' vol. iii. p. 673. There is no other species which possesses a similarly coloured tail inhabiting the West-Indian Islands; and it would appear that there is less doubt about the rightful appellation of this species than there is about many of this family mentioned by the earlier writers.

I have said there is no other species of Humming-bird inhabiting the West Indies which may be taken for this. It will be noticed that I have placed among the synonyms Mr. Gould's *Lampornis virginalis*, as I have not been able to satisfy myself

that it is entitled to specific distinction. The colour of the median tail-feathers, mentioned by Mr. Gould as one great point of difference, does not hold good, as I have seen specimens from St. Thomas with them as dark as can be seen in any example from St. Domingo; and the size of the birds from the two islands is not appreciably different.

Dr. Bryant obtained the species in Porto Rico.

#### LAMPORNIS MANGO.

*Mango-bird*, Albin, Birds, vol. iii. p. 45, t. 49. fig. 6.

*Trochilus mango*, Linn. Syst. Nat. p. 191, sp. 10 (1766); Gmel. Syst. Nat. p. 491 (1788).

*Trochilus porphyurus*, Shaw, Nat. Misc. vol. ix. pl. 333.

*Lampornis mango*, Gosse, Birds of Jamaica, p. 88 (1847).

*Lampornis porphyurus*, Gould, Mon. Troch. vol. ii. pl. lxxxi.

*Hab.* Jamaica.

This is the species usually known as *L. porphyurus* of Shaw. Albin, who first gave a description of it, as quoted above, in 1740, states that in the year 1701, when he was in Jamaica, he captured, in the dusk of the evening, one of these birds and her nest; and as the species generally called *Lampornis mango* is never found in Jamaica, there can be no doubt to which bird Albin referred. Linnæus, in 1766, in his 'Systema Naturæ,' p. 191, gives *Lampornis mango*, with a short diagnosis that may well apply to this species, and quotes as the first of his synonyms the *Mellivora mango* of Albin, which is the bird usually mentioned by authors as *L. porphyurus*. Whether or not it is correct to consider the synonym first given as the type of the species an author intends to indicate when writing out his list, is in this case of little or no moment; for as Linnæus thus quotes the species named *M. mango* by Albin under this appellation, it naturally takes precedence of *porphyurus* bestowed upon the bird by Shaw many years afterwards. Brisson, in his description of *Polytmus jamaicensis*, evidently had the bird from the mainland, the *L. mango* of authors, before him. Linnæus did not discriminate the difference between the two birds of Albin and Brisson, but confounded them in his synonymy, which Gmelin tried to rectify by making two classes under the same specific name. The



term *mango*, however, is evidently the one applied first to the species from Jamaica ; and if the law of priority has any force, the *porphyryrus* of Shaw must sink into a synonym, and the present species be henceforth known as *Lampornis mango*, and the one usually called by that name will bear that of *Lampornis violicauda*, it being the *Trochilus violicauda* of Boddaert, *L. albus* of Gmelin.

#### LAMPORNIS CALOSOMA.

*Chrysolampis chlorolæmus*, Elliot, Ann. & Mag. Nat. Hist. 4th ser. vi. p. 346 (1870).

*Hab.* —?

I described this species in the 'Annals & Magazine of Natural History' as above cited, under the name of *Chrysolampis chlorolæmus*, placing it in that genus after consulting with Mr. Gould, who considered it belonged there, on account of the feathers protruding forward upon the bill, somewhat like those in *C. moschitus*. But after further investigation, as suggested by Messrs. Salvin and Sclater, Ibis, 1871, p. 429, I am satisfied that its proper position is among the species of the present genus, and comes nearest to the *Lampornis dominicus* ; the specific name of *chlorolæmus*, having been already bestowed on a bird of a very closely allied genus, cannot well be retained without danger of creating confusion ; and I therefore propose to substitute for it the appellation of *calosoma*, so that the species will henceforth be known as *Lampornis calosoma*.

The habitat of this species is unknown ; but it is not unlikely that it may be a native of some one of the West-Indian Islands of whose ornithology we at present know nothing. If this supposition should prove to be correct, a fine field still remains unexplored for some enterprising naturalist ; for among the members of the genus *Lampornis* the present species is one of the very handsomest, and doubtless many equally fine birds in this and other families are still unknown to science, to reward the researches of the explorer. I give a short description of the species, in order to bring it more prominently before ornithologists, in hopes that other specimens may be procured, the type in my collection remaining as yet unique.

Top of head and neck light metallic green, in some lights purplish ; a black band across the back, rest of upper parts green ; tail fiery copper-colour, feathers margined with blackish purple ; throat brilliant emerald-green ; underparts black, flanks white ; tail-coverts chestnut, basal portions black. Length 4 inches, bill .55, wing 2.4, tail 1.3.

*EULAMPIS JUGULARIS.*

*Trochilus jugularis*, Linn. Syst. Nat. p. 190, sp. 7 (1766) ; Gmel. Syst. Nat. p. 489, sp. 7 (1788).

*Trochilus auratus*, Gmel. Syst. Nat. p. 487, sp. 29 (1788).

*Trochilus bancrofti*, Lath. Ind. Orn. vol. i. p. 317.

*Eulampis jugularis*, Gould, Mon. Troch. vol. ii. pl. lxxxii.

*Hab.* Island of Nevis (*Gould*), Martinique, Dominica (*Taylor*), Santa Lucia (*Semper*).

This genus comprises, according to my views, two species, the present and the one following. The one now under consideration is among the most beautiful of all Humming-birds ; and although it was formerly common in collections, having been received chiefly from Martinique by the French naturalists, it has become of late years rather scarce. There does not seem to be any difficulty in the synonymy, the species being too conspicuous and well marked to be easily mistaken for any other.

*EULAMPIS HOLOSERICEUS.*

*Trochilus holosericeus*, Linn. Syst. Nat. p. 191, sp. 11 (1766).

*Eulampis holosericeus*, Gould, Mon. Troch. vol. ii. pl. lxxxiii. ; Cassin, Proc. Phil. Acad. 1860, p. 377.

*Eulampis chlorolæmus*, Gould, Mon. Troch. vol. ii. pl. lxxxiv.

*Eulampis longirostris*, Gould, Introd. Mon. Troch. p. 69, sp. 95.

*Hab.* St. Thomas, Ste. Croix (*Newton*), Martinique, Dominica (*Taylor*), Santa Lucia (*Semper*).

*E. holosericeus* has been known for many years to ornithologists ; and there are few collections that do not contain numerous examples. Mr. Gould, in his well-known work on this family, has named a bird supposed to come from the island of Nevis *E. chlorolæmus*. With every desire to perceive any specific difference it might exhibit, and although I have examined carefully, by the kindness of Mr. Gould, the specimens in his



collection, I am unable to consider that there is more than one species of this form. The difference in the shade of colour is what may be seen in many species of Humming-birds, notably in such a one as *Calothorax cyanopogon*, where the luminous throat-mark in individuals varies greatly, and cannot be deemed a specific character.

Mr. Gould has also described two specimens in his collection as *E. longirostris*. These were kindly shown to Mr. Salvin and myself; and we compared them carefully with examples of *E. holosericeus*. They are unfortunately in very bad condition, and the frontal feathers of the best one are wanting; allowing for this, we ascertained that the bill was but very little longer than those of the common species. Not thinking this a sufficient character to establish the species, I have placed *E. longirostris* among the synonyms of *E. holosericeus*.

#### AITHURUS POLYTMUS.

*Trochilus polytmus*, Linn. Syst. Nat. p. 189, sp. 4 (1766).

*Ornismya cephalatra*, Less. Ois.-mouch. p. 78, pl. xvii.

*Trochilus maria*, Hill, Ann. & Mag. Nat. Hist. 2nd. ser. iii. p. 258 (1849).

*Aithurus polytmus*, Gould, Mon. Troch. vol. ii. pl. xcviii.

"*Aithurus fuliginosus*, Hill," March, Proc. Ac. Phil. 1863, p. 285.

*Hab.* Jamaica.

This handsome bird, conspicuous for the lengthened plumes of the lateral tail-feathers, is one of the commonest species of the island of Jamaica, where alone it is found. The female is a plain little bird, with a white breast, the long tail-feathers being absent.

#### DORICHA EVELYNÆ.

*Trochilus evelynæ*, Bourc. Proc. Zool. Soc. 1847, p. 44.

*Trochilus bahamensis*, Bryant, Proc. Nat.-Hist. Soc. Boston, vol. vii. p. 106 (1859).

*Doricha evelynæ*, Gould, Mon. Troch. vol. iii. pl. clvi.

*Hab.* Nassau and New Providence, Bahamas (*Bryant*).

This species still remains very rare in collections, only the dried bodies of the birds having been received; good skins have never yet been sent to Europe.

## DORICHA LYRURA.

*Doricha lyrura*, Gould, Ann. & Mag. Nat. Hist. 4th ser. vol. iv. p. 112 (1869).

*Hab.* Long Island, Bahamas (*Bryant*).

This beautiful species, closely allied to the *D. evelynæ*, is one of the last novelties procured by the late Dr. Bryant during his sojourn in the West Indies. It differs chiefly in the remarkable shape of the tail-feathers, which, when they are spread, partake of a lyre-like form; hence its specific name. It has only been obtained by Dr. Bryant; and how many islands it may inhabit, or whether it is restricted to the one given above, is unknown.

## TROCHILUS COLUBRIS.

*Trochilus colubris*, Linn. Syst. Nat. p. 191, sp. 12 (1766); Gould, Mon. Troch. vol. iii. pl. cxxxi., et auct.

*Hab.* Cuba (*Gundl.*), Bermuda (*Gould*).

The Bermudas, Bahamas, and the island of Cuba appear to be the only ones visited by this little wanderer, which in its annual migrations is found from the plains of the Arctic regions to those of Central America.

## MELLISUGA MINIMA.

*Trochilus minima*, Linn. Syst. Nat. vol. i. p. 193; Gmel. Syst. Nat. vol. i. p. 500.

*Trochilus vieillotii*, Shaw, Gen. Zool. vol. viii. p. 347.

*Onismya catharinæ*, Sallé, Rev. Zool. 1849, p. 498.

*Mellisuga humilis*, Gosse, Birds of Jamaica, p. 127 (1847).

*Mellisuga minima*, Sallé, Proc. Zool. Soc. 1857, p. 233; Gould, Mon. Troch. vol. iii. pl. cxxxiii.

*Hab.* Jamaica (*Gosse, March*), St. Domingo (*Sallé*).

This plain little bird, if not the smallest, is certainly one of the most diminutive of the Trochilidæ, and is an inhabitant of the two large islands of Jamaica and St. Domingo, where alone it has been found. It is the only species known of the genus *Mellisuga*; and neither sex possesses any conspicuous metallic colouring.

## CALYPTE HELENÆ.

*Orthorhynchus helenæ*, Lembeye, Aves de la Isla de Cuba, p. 70, pl. x. fig. 2 (1850).

*Calypte helenæ*, Gould, Mon. Troch. vol. iii. pl. cxxxvi.

*Orthorhynchus boothi*, Gundl. J. f. Orn. 1856, p. 99.

*Hab.* Cuba.

This beautiful species has never been met with elsewhere than in the island of Cuba, and it does not appear to be very abundant even there.

ORTHORHYNCHUS CRISTATUS.

*Trochilus cristatus*, Linn. Syst. Nat. i. p. 192; Schomb. Hist. Barb. p. 681.

*Trochilus pileatus*, Lath. Ind. Orn. vol. i. p. 318.

*Orthorhynchus cristatus*, Gould, Mon. Trochil. vol. iv. pl. ccv.

*Hab.* Barbadoes (*Schomburgk*), St. Vincent (*Guilding*).

This handsome species has as yet only been met with on the islands of St. Vincent and Barbadoes—a distinct species (or at all events a race of the same form) inhabiting the island of Santa Lucia, a little to the northward.

ORTHORHYNCHUS EXILIS.

*Trochilus exilis*, Gmel. Syst. Nat. vol. i. p. 484 (1788).

*Orthorhynchus exilis*, Gould, Mon. Troch. vol. iv. pl. ccvii.

*Hab.* Dominica (*Taylor*), Nevis, St. Thomas, Ste. Croix (*Newton*).

This species appears to have, so far as our knowledge enables us to say, a much wider range than its allies. It has been discovered upon the four islands enumerated above; but as there are many others lying between Dominica and Nevis (the two nearest together of those named), of the ornithic fauna of which we are in perfect ignorance, it is natural to suppose it may be found also on some of them, especially as the great islands of Guadaloupe and Martinique are among those that intervene. Up to the present time the species is only known from the four islands given.

ORTHORHYNCHUS ORNATUS.

*L'oiseau-mouche huppé*, Less. Hist. Nat. des Ois.-mouch. p. 113, pls. xxxi. & xxxii. ?

*Orthorhynchus ornatus*, Gould, Mon. Troch. vol. iv. pl. ccvi.; Sci. Proc. Zool. Soc. 1871, p. 272.

*Hab.* Martinique, Santa Lucia (*Semper*).



This species, if it is really entitled to such a distinction, is found exactly between *O. cristatus* of Barbadoes and St. Vincent, and *O. exilis* of the Virgin Islands and Nevis. It has perhaps a little more blue upon the crest; but if the locality is wanting, it is not an easy matter to separate specimens from *O. exilis*, to which the present bird bears a very close resemblance.

**SPORADINUS RICORDI.**

*Orthorhynchus ricordi*, Dela Sagra, Hist. Nat. de la Isla de Cuba.

*Ornismya parzudaki*, Less. Rev. Zool. 1838, p. 315.

*Hylocharis ricordi*, Gray, Gen. Birds, vol. i. p. 114, sp. 23.

*Sporadinus ricordi*, Gould, Mon. Troch. vol. v. pl. cccxlviii.

*Hab.* Cuba.

The island of Cuba possesses at least two species of Humming-birds not met with elsewhere, the *Calypte helenæ* and the one now under consideration. It is rather common in its native place, and has never been known to leave the island.

**SPORADINUS ELEGANS.**

*Trochilus elegans*, Vieill. Ois. Dor. pl. xiv. p. 32 (1802).

*Trochilus swainsoni*, Jard. Nat. Lib. Humm. Birds, vol. ii. p. 58.

*Hylocharis elegans*, Gray, Gen. Birds, p. 114, sp. 18.

*Sporadinus elegans*, Gould, Mon. Troch. vol. v. pl. cccxlvii.

*Hab.* St. Domingo.

Very strange is the fact that so many of the West-Indian islands appear to possess certain species of this family that are not met with elsewhere. St. Domingo is another proof of this as it is the only spot where the present species has been discovered; and we may be safe in believing that it never leaves that island; for so conspicuous a bird would not likely be overlooked by any ornithologist visiting the neighbouring groups in pursuit of their feathered inhabitants.

**SPORADINUS MAUGÆI.**

*Trochilus maugæus*, Vieill. Ois. Dor. vol. i. pp. 77, 79, 80, pls. xxxvii., xxxviii.; id. Dict. d'Hist. Nat. vol. vii. p. 368.

*Ornismya maugæus*, Less. Hist. Nat. Ois.-mouch. p. 194, sp. 68, 69.

*Sporadinus maugæi*, Gould, Mon. Troch. vol. v. pl. cccxlix.

*Hab.* Porto Rico.

One of the very rarest species of Trochilidæ. It has never yet been seen elsewhere than in the island of Porto Rico, where I have no reasons for supposing it to be otherwise than abundant.

|                                   | Nassau. | Long Island. | Cuba. | Jamaica. | St. Domingo. | Porto Rico. | St. Thomas. | Ste. Croix. | Sombrero. | St. Bartholomew. | Nevis. | Dominica. | Martinique. | Santa Lucia. | St. Vincent. | Barbadoes. |
|-----------------------------------|---------|--------------|-------|----------|--------------|-------------|-------------|-------------|-----------|------------------|--------|-----------|-------------|--------------|--------------|------------|
| <i>Lampornis viridis</i> .....    | ..      | ..           | ..    | ..       | ..           | *           | *           | *           |           |                  |        |           |             |              |              |            |
| —— <i>dominicus</i> .....         | ..      | ..           | ..    | ..       | *            | *           | *           |             |           |                  |        |           |             |              |              |            |
| —— <i>mango</i> .....             | ..      | ..           | ..    | *        |              |             |             |             |           |                  |        |           |             |              |              |            |
| —— <i>calosoma</i> .....          | ..      | ..           | ..    |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Eulampis jugularis</i> .....   | ..      | ..           | ..    | ..       | ..           | ..          | ..          | ..          | ..        | ..               | *      | *         | *           | *            |              |            |
| —— <i>holosericeus</i> .....      | ..      | ..           | ..    | ..       | ..           | ..          | *           | *           | *         | *                | ..     | *         | *           | *            | *            |            |
| <i>Aithurus polytmus</i> .....    | ..      | ..           | ..    | *        |              |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Doricha evelynæ</i> .....      | *       |              |       |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| —— <i>lyrura</i> .....            | ..      | *            |       |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Trochilus colubris</i> .....   | ..      | ..           | *     |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Mellisuga minima</i> .....     | ..      | ..           | ..    | *        | *            |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Calypte helenæ</i> .....       | ..      | ..           | *     |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| <i>Orthorhynchus cristatus</i> .. | ..      | ..           | ..    | ..       | ..           | ..          | ..          | ..          | ..        | ..               | ..     | ..        | ..          | ..           | *            | *          |
| —— <i>exilis</i> .....            | ..      | ..           | ..    | ..       | ..           | ..          | *           | *           | ..        | *                | *      | *         | ..          | ..           |              |            |
| —— <i>ornatus</i> .....           | ..      | ..           | ..    | ..       | ..           | ..          | ..          | ..          | ..        | ..               | ..     | ..        | *           | *            |              |            |
| <i>Sporadinus ricordi</i> .....   | ..      | ..           | *     |          |              |             |             |             |           |                  |        |           |             |              |              |            |
| —— <i>elegans</i> .....           | ..      | ..           | ..    | ..       | *            |             |             |             |           |                  |        |           |             |              |              |            |
| —— <i>maugæi</i> .....            | ..      | ..           | ..    | ..       | ..           | *           |             |             |           |                  |        |           |             |              |              |            |

XLI.—*Note on some of the Cranial Peculiarities of the Woodpeckers.* By A. H. GARROD, B.A., Prosector to the Zoological Society.

CONSIDERING the method adopted by the Woodpeckers for obtaining their food, it is hardly surprising that they possess cranial features peculiar to themselves; for it is scarcely conceivable that the head, the most delicately constructed portion of the body, should be employed as a powerful hammer or axe whose stroke can be heard at a considerable distance, without some modifications in structure which would assist in increasing its efficiency for the purpose.

Accordingly, we find that the bones are thicker and stronger

than in most birds, and there is only a slight movement possible of the upper jaw on the head proper. The interorbital septum is thick and nearly complete, supporting a median protrusion on the front of the skull which is so considerable as to throw the free extremities of the hyoid bones to one side or the other, thus causing the skull to be slightly unsymmetrical. Further, the axis of the upper beak is peculiarly low, being continuous with that of the basicranium; and this results from the lowness in position of the points of junction of the superior processes of the præmaxillæ with the frontal region of the skull, which renders the angle between the beak and skull less obtuse than is generally the case. In those birds in which there is considerable hinge-motion of the upper beak on the head, as in the Parrots, the basisphenoid rostrum is generally long and of uniform thickness for some distance, and the conjoined palatine bones, with the vomer between them and the pterygoids articulated behind, form a longitudinal flange along the upper surface of the median junction, which runs backwards and forwards on the rail formed by the basisphenoid rostrum during the movements of the beak. In the Woodpeckers any considerable articulation of this kind would reduce the value of the head as an axe; consequently the posterior ends of the palatine bones are not well developed, and they scarcely unite in the middle line, while further forwards the vomer is not seen in the maxillo-palatine region, and these latter bones also are only slightly developed. A similar tendency among Passeriniiform birds to the reduction of the vomer in front is found, combined with a complete absence of the maxillo-palatines, in *Menura* \*.

Professor Huxley, in his paper "On the Classification of Birds" †, has entered into considerable detail respecting the Woodpecker's palate, and from not finding a vomer present, and observing the peculiar longitudinal bony spicula connected with the inner edges of the palatine bones, opposite to and behind the fenestræ they assist to enclose, is led to think that these

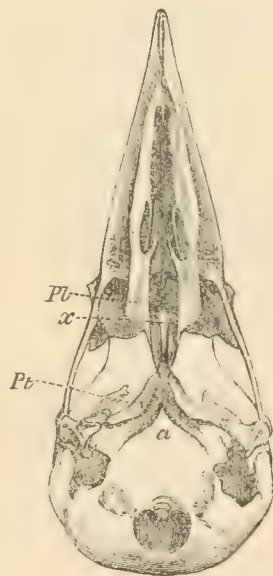
\* Since the above has been in print I find that the maxillo-palatines are not absent in *Menura*, but are long and slender, differing somewhat from the ordinary passerine type, but separate from one another and from the vomer.

† Proc. Zool. Soc. 1867, pp. 415-472.



spicula are the rudiments of the vomer, which has not ossified across the middle line. But in carefully prepared skulls they look much more like the inner edges of the imperfectly ossified palatines, as they are connected completely with them at both ends. Further, in most of the specimens of *Gecinus viridis* and its allies that I have had the opportunity of examining, I have found a median bone, situated between the palatines, and supported like a vomer on the basisphenoid rostrum, at the anterior end of its broader portion. This bone is small, and shaped very much like a spear-head with the tip directed forwards, whilst posteriorly it gradually becomes fibrous and tends to bifurcate, but not in the ossified part. It does not extend backwards quite so far as the pterygo-palatine articulation. The accompanying sketch will enable its shape and position to be more clearly perceived.

Palate of *Gecinus viridis*, showing the vomer *x*, between the palatines *Pl*. The pterygoids are marked *Pt*, and the spine of the basicranium *a*.



Though this bone is situated rather further back than the vomer in most birds, yet it is found similarly placed in some, as in *Megalæma*, which by the way has the anterior termination of its vomer truncated in front, and produced forwards at the corners, as in the Crow—though in the former bird these processes articulate, and do not anchylose with the posterior ends of the palatine plates of the maxillo-palatines.

On cutting the palatine bones of *Gecinus* from the anterior

part of the skull, and disarticulating them from the pterygoids, the bone which I suppose to be the vomer comes away with the palatines, as would be expected, were such the case.

The absence of truncation in the vomer of the Woodpeckers tends by itself to remove them from a close relationship with the Passerine birds; but, as I before remarked, this peculiarity may depend on their special habits. There is, however, in the shape of the pterygoid bones a character which tends to bring them together again. In Passerine birds the pterygoids extend forwards for a considerable distance in front of the point of contact or articulation with the palatines. These anterior processes are vertically expanded and in contact with the rostrum, and probably sometimes with the crura of the vomer; they are situated above (that is, deeper than) the posterior internal angles of the palatines, and therefore are not seen while looking at the surface of the palate, but only on a side view. In the Woodpeckers and other birds related to them these processes are also present, but they are absent in most others, though the Anserine birds possess them. In the Woodpeckers, also, there is a very peculiar anteriorly directed process arising from the upper part of the middle of the body of the pterygoid bone, which is quite independent of the one above described.

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XLII.—*On a Collection of Birds recently made by Mr. A. H. Everett in Northern Borneo.* By ARTHUR, Viscount WALDEN, P.Z.S., F.R.S.

(Plate XII.)

HAVING lately had an opportunity of examining a small collection of birds obtained in Northern Borneo by Mr. A. H. Everett, it has occurred to me that a list of the species it included might form an acceptable addition to our knowledge of the avifauna of that island. Hitherto the Bornean collections sent to London by Mr. Everett have been dispersed before being catalogued, and the valuable materials he had contributed to the formation of a complete list of North-Bornean birds were thus rendered unavailable. This is the more to be regretted, as most of his spe-